

Application No. 10/708,205
Docket No. 137229
Amendment dated February 20, 2006
Reply to Office Action of November 18, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently amended): A process for refurbishing a worn surface of a component subject to high compression contact, the process comprising the steps of:

removing a surface region of the worn surface so as to define a repair surface on the component;

forming a braze tape from a slurry, the braze tape comprising a metallic cobalt-base wear-resistant alloy and a cobalt-base braze material having a lower melting temperature than the wear-resistant alloy;

applying the braze tape to the repair surface;

heat treating the braze tape and the repair surface to cause the braze tape to diffusion bond to the repair surface so as to define a built-up surface;

aging the braze tape at a temperature of about 1090°C to about 1150°C for a duration of about one to about four hours; and then

machining the built-up surface to remove a surface portion of the braze tape and define a wear-resistant coating on the component.

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Claim 2 (Currently amended): The process according to claim 1, wherein the braze tape when applied to the repair surface consists essentially of the braze material and ~~the powder of the braze material is dispersed in the braze tape in a matrix consisting essentially of the powder of the wear-resistant alloy.~~

Claim 3 (Original): The process according to claim 1, wherein the braze tape is formed by a method comprising:

combining a powder of the braze material, a powder of the wear-resistant alloy, and a binder to form the slurry in which the powders are dispersed; and

forming and sintering the braze tape to remove the binder.

Claim 4 (Original): The process according to claim 1, wherein the braze material consists of, by weight, about 22.5 to 24.25% chromium, about 9.0 to 11.0% nickel, about 6.5 to 7.5% tungsten, about 3.0 to 4.0% tantalum, about 2.6 to 3.0% boron, with the balance cobalt, minor alloying elements, and incidental impurities.

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Claim 5 (Original): The process according to claim 1, wherein the wear-resistant alloy consists of, by weight, about 27 to about 29% molybdenum, about 16.5 to about 17.5% chromium, about 3.0 to about 3.5% silicon, up to about 3% iron, up to about 3% nickel, with the balance cobalt, minor alloying elements, and incidental impurities.

Claim 6 (Original): The process according to claim 5, wherein the braze material consists of, by weight, about 22.5 to 24.25% chromium, about 9.0 to 11.0% nickel, about 6.5 to 7.5% tungsten, about 3.0 to 4.0% tantalum, about 2.6 to 3.0% boron, with the balance cobalt, minor alloying elements, and incidental impurities, and the braze tape contains, by weight, about 10% to about 30% of the braze material and about 70% to about 90% of the wear-resistant alloy.

Claim 7 (Original): The process according to claim 1, wherein the component is a shroud support component of a turbomachine and the worn surface is on a support flange of the shroud support component, the support flange being adapted for supporting a shroud component of the turbomachine.

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Claim 8 (Currently amended): A process for refurbishing a shroud support component of a gas turbine engine, the shroud support component having a forward flange having a forward lip and a forward face that have worn surfaces as a result of being in high compression contact with an outer band of a nozzle of the gas turbine engine, the process comprising the steps of:

disassembling the nozzle from the shroud support component;

removing a surface region from each of the worn surfaces so as to define repair surfaces on the shroud support component;

forming braze tapes by combining a powder of a braze material, a powder of a metallic wear-resistant cobalt alloy, and a binder to form a slurry in which the powders are dispersed, and then forming and sintering to remove the binder, each of the braze tapes consisting of the braze material dispersed in a matrix material of the wear-resistant cobalt alloy;

attaching the braze tapes to the repair surfaces;

heat treating the braze tapes and the repair surfaces to cause the braze tapes to diffusion bond to the repair surfaces so as to define built-up surfaces;

aging the braze tapes at a first temperature of about 1090°C to about 1150°C for a duration of about one to about four hours; and then

machining the built-up surfaces to remove a surface portion of each of

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the braze tapes and define wear-resistant coatings on the shroud support component.

Claim 9 (Original): The process according to claim 8, wherein the braze material consists of, by weight, about 22.5 to 24.25% chromium, about 9.0 to 11.0% nickel, about 6.5 to 7.5% tungsten, about 3.0 to 4.0% tantalum, about 2.6 to 3.0% boron, with the balance cobalt, minor alloying elements, and incidental impurities.

Claim 10 (Original): The process according to claim 8, wherein the wear-resistant cobalt alloy consists of, by weight, about 27 to about 29% molybdenum, about 16.5 to about 17.5% chromium, about 3.0 to about 3.5% silicon, up to about 3% iron, up to about 3% nickel, with the balance cobalt, minor alloying elements, and incidental impurities.

Claim 11 (Original): The process according to claim 10, wherein the braze material consists of, by weight, about 22.5 to 24.25% chromium, about 9.0 to 11.0% nickel, about 6.5 to 7.5% tungsten, about 3.0 to 4.0% tantalum, about 2.6 to 3.0% boron, with the balance cobalt, minor alloying elements, and incidental impurities, and the braze tape contains, by weight, about 19% to

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about 21% of the braze material and the balance essentially the wear-resistant cobalt alloy.

Claim 12 (Currently amended): The process according to claim 1,
wherein after the aging step the braze tape undergoes a second aging step at
a temperature of about 760°C for about four hours. ~~A refurbished shroud~~
~~support component of a turbomachine, the shroud support component~~
~~comprising a surface and a wear-resistant coating diffusion bonded to the~~
~~surface, the wear-resistant coating having a machined surface that defines a~~
~~wear surface of the shroud support component, the wear-resistant coating~~
~~comprising a braze material dispersed in a matrix material of a wear-resistant~~
~~alloy.~~

Claim 13 (Currently amended): The process according to claim 1,
wherein as a result of the machining step the surface of the wear-resistant
coating has a surface finish of about 1 to about 3 micrometers Ra. ~~The~~
~~refurbished shroud support component according to claim 12, wherein the wear~~
~~surface is on a support flange of the shroud support component, the support~~
~~flange being adapted for supporting a shroud component of a turbomachine.~~

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Claim 14 (Currently amended): The process according to claim 8,
wherein after the aging step the braze tapes undergo a second aging step at a
temperature of about 760°C for about four hours. ~~The refurbished shroud~~
~~support component according to claim 12, wherein the braze material consists~~
~~of, by weight, about 22.5 to 24.25% chromium, about 9.0 to 11.0% nickel,~~
~~about 6.5 to 7.5% tungsten, about 3.0 to 4.0% tantalum, about 2.6 to 3.0%~~
~~boron, with the balance cobalt, minor alloying elements, and incidental~~
~~impurities.~~

Claim 15 (Currently amended): The process according to claim 8,
wherein as a result of the machining step the surfaces of the wear-resistant
coatings have surface finishes of about 1 to about 3 micrometers Ra. ~~The~~
~~refurbished shroud support component according to claim 12, wherein the~~
~~wear-resistant alloy consists of, by weight, about 27 to about 29%~~
~~molybdenum, about 16.5 to about 17.5% chromium, about 3.0 to about 3.5%~~
~~silicon, up to about 3% iron, up to about 3% nickel, with the balance cobalt,~~
~~minor alloying elements, and incidental impurities.~~

Claims 16-20 (Canceled)